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The National Molecular Subtyping Network
for Foodborne Disease Surveillance



PulseNetTM News

State & Local Public Health Laboratories
in the United States and PulseNet Canada



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9TH ANNUAL PULSENET UPDATE MEETING, MAY 2005, SEATTLE, WA

David Boyle, Washington State Public Health Laboratories, Shoreline, WA

It was the second time around for the Washington State Public Health Laboratories when they hosted the 9th Annual PulseNet Update Meeting from May 9 to 11, 2005. Seattle was subjected to a record 'epidemic' of "Pulsenuts." This year, the inaugural 'National Foodborne Disease Epidemiologists Meeting' was held concurrently with the 2005 PulseNet Update Meeting. In 1998, less than fifty scientists squeezed into the Washington State Public Health Laboratories (WA PHL) to discuss how to improve subtyping of *E. coli* O157:H7 and *Salmonella* by Pulsed-field Gel Electrophoresis (PFGE). This year, 350 people from around the world attended the meeting which is a testament to the success of the PulseNet program. The welcome to Seattle was perhaps a little wet, but any gloom was swept away by the opening reception at the impressive Columbia Tower Club in downtown Seattle by appreciated sponsors, Marler Clark Attorneys at Law, LLP, PS.

Monday morning was all business with welcome introductions from Romesh Gautam, the WA PHL Director, Maxine Hayes, the State Health Officer for the WA Department of Health, and, of course, from Bala "The Godfather" Swaminathan. In a historic plenary session, laboratorians and epidemiologists focused on cluster detection and investigation. The main message from the session was "there is always room for improvement." This message applies to both the lab and epi-



demiologists in terms of timeliness of subtyping analysis, as well as completed questionnaires for cluster investigations. However, as

SAVE THE DATE - 2006 PULSENET UPDATE MEETING TO BE HELD IN MIAMI, FL

The 10th Annual PulseNet Update Meeting will be held April 4 through 6, 2006 at the Radisson in Miami, Florida. APHL and CDC thank the Florida Department of Health, including the Bureau of Laboratories in Jacksonville and the Branch Laboratory in Tampa, for its assistance in choosing the venue for our next meeting. We look forward to seeing all of the PulseNet participants at the meeting in Miami.

Rob Tauxe reminded us, we are on the right track because the number of outbreaks reported by FoodNet has decreased each year, with the exception of *Salmonella*. Craig Hedberg (architect of "Team Diarrhea," MN) and Mike Lynch (CDC epidemiologist) came to similar conclusions, and all agreed that a better liaison between the lab and epidemiologists is essential to speed up cluster analyses.

Bill Marler, Marler Clark Attorneys at Law, presented an interesting view of the litigation process against producers/suppliers potentially responsible for foodborne disease outbreaks. Thankfully, we are all on the same side. We all strive for better protection of the public and Bill has never (yet) sued a public health laboratory.

A review of PulseNet activities revealed that in 2004, the PulseNet task force investigated 60% more clusters than the previous year. PulseNet's role in cluster detection and outbreak investigation would be enhanced if

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Update Meeting

(Continued from page 1)

all fingerprints were submitted in "real-time" to the national databases (a point stressed throughout the meeting) and by the use of the same state identifier (Key number) for both the NARMS samples and strains whose PFGE fingerprints are submitted to the PulseNet national databases. The Epidemiology Laboratory Capacity (ELC) Program, that provides partial funding for PulseNet activities at state and local health departments, has been strapped for funds in recent years; however, bioterrorism preparedness and response funds can be used to enhance PulseNet subtyping capabilities and to build capacity for subtyping. The number of public health laboratories will be expanded to test the next generation fingerprinting technologies for PulseNet.

The growth of PulseNet International has been a resounding success with PulseNet Europe receiving European Union funding and the appointment of Susanna Lukiinmaa to lead PulseNet Europe. PulseNet Asia Pacific is benefiting greatly from funding support from the Ministry of Health, Welfare and Labor, Japan. Hong Kong hosted the 2nd PulseNet Asia Pacific PulseNet Standardized PFGE Subtyping workshop in March 2005, which was extremely successful. PulseNet Latin America is also growing; their first PulseNet workshop and meeting was in July 2004, and their second one was held in June 2005.

In the session devoted to selection of appropriate subtyping strategies, Laura Kornstein, New York City Department of Health Labs, described the application of various statistical methods to assess or measure PFGE pattern diversity in *Salmonella* serotypes in order to help prioritize a list of serotypes for PFGE testing (i.e. create a hierarchy for priority testing when faced with multiple *Salmonella* isolates). Within 24 hours of her presentation, Paul Vauterin of Applied Maths created a BioNumerics script to calculate the "Kornstein diversity index II." This script is available on the WebBoard™. Stephen Dietrich, Michigan Department of Community Health, presented other typing methods by describing the optimal use of second enzyme testing, while Derek



Tillicum Village

Brown, Scotland, showed the usefulness of plasmid profiling in complementing *Salmonella* PFGE profiles. On Monday night, everybody boarded a cruise ship for a short ride to Tillicum Village. There they feasted on Salmon

PulseNet is planning to replace WebBoard™ with SiteScape™ by the fall of 2005: this product will increase the capability for customization of web conferencing.

cooked on cedar stakes over alder fires and learned some of the native myths and legends with a stage show, "Dance on the Wind."

Susan Hunter (CDC) led the software and communications session on Tuesday morning with several presentations covering upcoming software enhancements. PulseNet is planning to replace WebBoard™ with SiteScape™ by the fall of 2005; this product will increase the capability for customization of web conferencing. Kelley Hise (CDC) introduced the new features in BioNumerics v4.0 and the PulseNet Master Scripts v2. Robert Long (CDC) demonstrated a new Web Portal that will allow author-

ized users to query the PulseNet databases for clusters without having access to BioNumerics.

The laboratory session opened with Merritt Adams (CDC) giving the latest on PFGE subtyping of *Campylobacter* and the national database. Certification sets using the first enzyme, *SmaI*, are available now and those using the second enzyme, *KpnI*, will be

available soon. Following the *Campylobacter* presentation, Kara Cooper (CDC) described the development of the *Vibrio cholerae* protocol and Cindy Luey from the Public Health Laboratory Centre, Hong Kong discussed the current status of protocol validation. The development and use of Multiple-Locus Variant Analysis (MLVA) subtyping for *E. coli* O157:H7 was presented by Eija Hyytiä-Trees (CDC); it is ready for beta testing at selected state labs. Other MLVA assays nearing completion include those for *S. Typhimurium*, *S. Enteritidis*, and *Listeria monocytogenes*. The day wrapped up with a focus on general Quality Assurance/Quality Control issues with David Turgeon from CDC discussing the Clinical Laboratory Improvement Amendments (CLIA) as they relate to PFGE and Jennifer Kincaid (CDC) discussing PulseNet certification and proficiency testing. Jennifer also presented several suggestions for troubleshooting PFGE gels, followed by open troubleshooting sessions for both BioNumerics and laboratory issues. Thirty-three posters were available for viewing immediately after the open sessions and Applied Maths supplied hors d'oeuvres and soft drinks. Posters covered many facets of bacterial diseases and subtyping including PFGE, outbreak investigation case histories, and novel typing applications.

The final sessions on Wednesday morning explained how other federal organizations function in monitoring foodborne outbreaks and other threats. Emilio Esteban described the building of the Food Emergency Response Network (FERN) and the increasing importance of unifying the communication networks between different agencies (FERN, Laboratory Response Network [LRN], and PulseNet). Paula Cray, Research Leader of USDA VetNet, described the possibility of subtyping isolates throughout the entire food (Continued on page 5)

RECOGNITION OF EXCELLENCE: THE PULSESTAR AWARDS

Shari Rolando, Association of Public Health Laboratories, Washington, DC

The PulseStar Award is presented annually by the Foodborne and Diarrheal Diseases Laboratory Section of the Centers for Disease Control and Prevention (FDDLS/CDC) and the Association of Public Health Laboratories (APHL) to PulseNet participants whose efforts have contributed significantly to the advancement of PulseNet activities in public health during the previous year. Each award winner is presented with a plaque and a check for \$500 from APHL at the annual PulseNet Update Meeting. In recognition of many years of individual dedication to PulseNet, the 2005 PulseStar Awards were presented to Mike McDermott from the Oklahoma State Department of Health, Lee Wotherspoon from the Massachusetts State Laboratory Institute, and Carissa Pursell from the Kansas Department of Health and Environment.

For six years, Mike McDermott has single-handedly operated the Oklahoma Pulsed-field Gel Electrophoresis (PFGE) laboratory, running an average of 1,100 specimens each year. He has continually worked to improve the test-

ing process in Oklahoma and to expand PFGE testing capacity. Mike has considerable experience solving technical PFGE problems and his skills have been an asset to others in the network. Mike was recently promoted to Molecular Biology Supervisor for the Oklahoma Public Health Laboratory and is now in the process of training his replacement at the PFGE bench. Mike is well regarded by his supervisors and his peers, both within his state and around the country, and is well deserving of the PulseStar Award.

Lee Wotherspoon has been an active PulseNet participant for the Massachusetts State Laboratory Institute since coming on board in 2001. She is constantly looking for ways to improve the operation of the PFGE laboratory and to enhance the laboratory's role as a PulseNet Area Laboratory. Lee's expertise includes database management, validating new protocols, adding new organisms to the testing menu, and the education and training of both staff and visiting scientists. Most recently, Lee's (Continued on page 4)



Lee Wotherspoon



Carissa Pursell



Mike McDermott

Publications/Abstracts

- Adams M, O'Reilly C, York S, Wagner J, Martinka K, Fitzgerald C. **Campylobacter jejuni Year In Review, PulseNet National Database, 2004.** 9th Annual PulseNet Update Meeting presented in Seattle, Washington, May 2005.
- Adams M, Fitzgerald C, Steigerwalt J, Sails A, Bumbaugh A, Fields P. **Molecular Characterization of Outbreak-Associated Campylobacter jejuni.** 106th Annual American Society For Microbiology presented in Atlanta, GA, June 2005.
- Bordoni P, Graves L, Mauro L. **PulseNet's National Listeria Database: 2004 Year in Review.** 9th Annual PulseNet Update Meeting presented in Seattle, Washington, May 2005.
- Gerner-Smidt P. **PulseNet USA Network.** 7th International Meeting on Microbial Molecular Markers (IMMEM) presented in Victoria, British Columbia, Canada, May 2005.
- Gerner-Smidt P, Swaminathan B, Barrett T. **Delineating Clusters of Foodborne Infections by Pulsed Field Gel Electrophoresis (PFGE) – The "Tenover Criteria" Revisited.** 7th International Meeting on Microbial Molecular Markers (IMMEM) presented in Victoria, British Columbia, Canada, May 2005.
- Graves L, DeWitt W, Mauro L, Bordoni P, Swaminathan B. **Comparison of a Multiplex PCR Assay and**

- Conventional Serotyping for Sero-classification of Listeria monocytogenes isolates.** 9th Annual PulseNet Update Meeting presented in Seattle, Washington, May 2005.
- Graves L, Hunter S, Ong A, Schoonmaker-Bopp D, Hise K, Kornstein L, DeWitt W, Hayes P, Dunne E, Mead P, Swaminathan B. **Microbiological Aspects of the Investigation That Traced the 1998 Outbreak of Listeriosis in the United States to Contaminated Hot Dogs and Establishment of Molecular Subtyping-Based Surveillance for Listeria monocytogenes in the PulseNet Network.** J. Clin. Microbiol. 2005 43: 2350-2355.
- Hunter S, Long R, Van Duyn S. **Web Based Tools for Cluster Detection and Querying the PulseNet National Databases.** 105th Meeting of the American Society for Microbiology presented in Atlanta, Georgia, June 2005.
- Jennings D. **PulseNet Shigella National Database 2004 Year in Review.** 9th Annual PulseNet Update Meeting presented in Seattle, Washington, May 2005.
- Jennings D, Hise K, Colindres R, Boxrud D, Calimlim P, Tamashiro D, Effler P, Terajima J, Watanabe H, Swaminathan B. **PulseNet International's Role in Shigella sonnei Outbreak Associated with Air Travel from Hawaii in August of 2004.** 7th International Meeting on Microbial Molecular Markers (IMMEM) presented in Victoria, British Columbia,

Canada, May 2005.

- Joyner M, Kincaid J. **E. coli O157:H7 Year in Review, PulseNet National Database, 2004.** 9th Annual PulseNet Update Meeting presented in Seattle, Washington, May 2005.
- Joyner M, Kincaid J. **Significance of Second-Enzyme Data, PulseNet National E. coli Database, 2004.** 9th Annual PulseNet Update Meeting presented in Seattle, Washington, May 2005.
- Joyner M, Gerner-Smidt P, Hise K, Kincaid J, Ribot S, Swaminathan B. **Trends of Outbreak-Associated E. coli O157:H7 Patterns, PulseNet National Database, 2002-2004.** 105th Annual ASM Meeting presented in Atlanta, Georgia, June 2005.
- Kincaid J, Steward C, Sheehan D. **PulseNet Quality Assurance and Quality Control (QA/QC) Program: An Update.** 9th Annual PulseNet Update Meeting presented in Seattle, Washington, May 2005.
- Lockett J, McGlinchey B, Van Duyn S, Patel N. **PulseNet Salmonella National Database Year in Review, 2004.** 9th Annual PulseNet Update Meeting presented in Seattle, Washington, May 2005.
- Patel N, Van Duyn S, Lockett J, McGlinchey B. **Multistate Outbreak of Salmonellosis Associated with Roma tomatoes—Mid-Atlantic, 2004.** 9th Annual PulseNet Update Meeting presented in Seattle, Washington, May 2005.

PulseStar Awards (Continued from page 3)

input was critical for the success of the PulseNet Regional Lab/Epi Meetings in Boston and Atlanta. She developed the templates for the regional breakout sessions, which have been extremely useful in organizing and identifying the complex issues that face PulseNet laboratories — their role in public health, their relationship with epidemiologists, and their ability to do near real-time subtyping. In the words of her supervisor, "Lee is truly a PulseStar."

Carissa Pursell consistently sets the highest standard for active participation in PulseNet. She has both technical competence and programmatic knowledge which ensure that Kansas is in the best position to detect cases associated with local and multi-state foodborne outbreaks. In 2004, Carissa obtained funding for a 2nd PFGE system, doubled testing capacity, and shortened the time for submitting patterns to the national databases. Carissa has been instrumental in improving laboratory data exchange with the epidemiologists. Carissa also works well with PulseNet staff outside of her region, as demonstrated by the fact that two of her nominations were received from outside the state of Kansas. Carissa has been the driving force behind the improvement of molecular surveillance in Kansas and richly deserves the PulseStar Award.

In addition to the PulseStar Awards, other PulseNet participants were recognized at the 2005 Update Meeting. A PulseNet Special Recognition Award was given to Jim Jones from the Outbreaks Section of the USDA/FSIS Eastern Laboratory. This award was presented to Jim Jones for executing PulseNet-related activities for USDA/FSIS concerning isolates of *E. coli* O157:H7 from beef and *Salmonella* and *Listeria monocytogenes* from ready-to-eat foods. Jim's proactive use of the PulseNet database establishes links between food isolates and clinical isolates and indicates when pathogen strains reside in FSIS-regulated establishments. Additionally, Jim shares his knowledge with the public health community by publishing articles and abstracts based on his submissions to PulseNet. Jim displays a never-ending willingness to present the USDA aspects of PulseNet, including a talk at the recent PulseNet regional meeting in Atlanta. PulseNet is appreciative of all of Jim's efforts over the many years that he has been a part of the network.

PulseNet International Awards were presented to the following groups:

JUN TERAJIMA AND HARUO WATANABE,
PulseNet Japan

For their leadership role in demonstrating the public health utility of using the PulseNet standardized protocols for subtyping and comparing PFGE patterns between PulseNet networks

- Terajima and Watanabe led the laboratory investigation of three cases of *E. coli* O157:H7 in a Japanese family in Okinawa in February 2004, which was traced to a specific lot of ground beef produced by a US company and distributed to US military installations in the far east and to four US states
- The nominees also collaborated with PulseNet USA in September 2004 in the investigation of a shigellosis outbreak that was traced to food served on flights originating from Hawaii

CINDY LUEY, AGATHA CHIU, SUSANNA LEUNG, DANNY CHEUNG, ALF CHU, MAN YU CHU, and CHOI HA MA, Microbiology Division, Public Health Laboratory Centre (PHLC), *Hong Kong*

For providing outstanding support for PulseNet's first two PFGE laboratory and BioNumerics workshops in 2004 and 2005 for Asia Pacific participating laboratories

- The Microbiology Division of PHLC has taken a leadership role in organizing the PulseNet Asia Pacific network
- They have worked with participants from other countries/areas to institute a modern, functional molecular subtyping network in the Asia Pacific region

ENRIQUE PEREZ, INPPAZ, Pan American Health Organization, *PulseNet Latin America*

For his support and dedication to establish and consolidate PulseNet Latin America

- In 2003, Enrique Perez accepted the challenge to be part of the coordinating team for the development of PulseNet Latin America
- Enrique Perez was an integral part of the 1st planning meeting in December 2003, the 1st training course in July 2004, the memorandum of understanding that was accepted by all the countries in the network in July 2004, and the constitution of the PulseNet Latin America Steering Committee

APHL and FDDLS/CDC appreciate the ongoing efforts of all members of the PulseNet Network. Your timely and conscientious work continues to help in the investigation and prevention of foodborne illness. 

UPDATE MEETING EVALUATION SUMMARY

Beth McGlinchey, USDA—ARS, Athens, Georgia

The 2005 PulseNet Update Meeting evaluations indicated a clear majority of this year's participants were impressed by the interesting content and organization of the meeting! The final number of attendees for the PulseNet Update meeting was 182. Sixty people, or 33% of the meeting's registrants, completed and submitted an evaluation form. Their comments and suggestions are, as always, greatly appreciated and will be taken into consideration while planning the 2006 PulseNet Update Meeting. Thanks to all of you who took the time to fill out the evaluation!

HIGHLIGHTS FROM THE SURVEY:

- The theme this year, "Molecular Epidemiology in Action," was well received by the participants of the survey. In fact, the theme was considered to be appropriate for the meeting by 98% of the people who filled out the evaluation.
- When asked which topics were of the most interest to the attendees, the top five responses were: Bill Marler's talk on the legal aspects of PulseNet (23); the new features of BioNumerics version 4.0 (17); plasmid profiling and other methodologies (11); open sessions (11); and CLIA issues (6).
- Many participants of the Update Meeting mentioned the benefits of having the Epidemiology Meeting at the same time and requested more interaction between the two groups in the future.
- Seattle proved to be an excellent city to hold the meeting! People enjoyed the trip to Blake Island, Tillicum Village and appreciated the central location of the hotel. Some participants mentioned that the Seattle Westin was the best hotel yet and that the "heavenly bed" was, well... heavenly.

Thanks to all of you who helped to make this meeting a great success, whether by planning, presenting, or attending. Your hard work helped make this year's meeting enjoyable to everyone who attended! Approximately 73% of the people who submitted a survey, plan on attending the 2006 PulseNet Update Meeting in Miami. We look forward to seeing all of you again next year!

KENTUCKY STATE PUBLIC HEALTH LABORATORY

Karim George, Virology Supervisor, Department of Public Health Kentucky

The Kentucky State Public Health Laboratory (KY PHL) is part of the Department for Public Health in the Division of Laboratory Services. The KY PHL offers a variety of testing capabilities including environmental, diagnostic, and referred specimens, as well as, Pulsed-field Gel Electrophoresis (PFGE) sampling used to trace food-borne outbreaks and nosocomial infections. Later in 2005, the KY PHL will be expanding their newborn screening program to the national standard, implementing Polymerase Chain Reaction (PCR) testing in the Virology and Sanitary Bacteriology Section, and they hope to increase the number of staff involved in PulseNet activities. The Kentucky lab is also excited about the additions of Stephanie Mayfield, the new director, and Robin Cotton, epidemiologic liaison, and would like to welcome them to the Pulsed-field team.

Beginning in the spring of 2000, Kentucky initiated its

PFGE program and started testing *E. coli* O157:H7. Initially the lab only had enough resources to subtype *E. coli* O157:H7 in real-time and *Salmonella* when requested by the CDC or epidemiology. During the next four years, the PFGE program was considered part of the Bacteriology and Parasitology Section. Recently, the PFGE program has been transferred to the Virology Section. Current PulseNet staff at the Kentucky lab is optimistic about adding additional laboratory staff dedicated to pulse-field testing this year.

The Virology Section is undergoing tremendous changes at this time. Along with PFGE testing and NARMS, this section is incorporating new technology which includes PCR testing for Flu and Norovirus, as well as conversion to shell vials for viral culture. In addition, the Rabies section is moving from mouse inoculation to cell culture for identification/confirmation



of infection, which should be completed in August. The lab is also investigating the possibility of using our Nucleic Acid Sequence Based Amplification system for Enterovirus testing.

At present Jennifer Everman, the primary tech for all PulseNet and NARMS duties, is working on certification for *E. coli* and *Salmonella*. In March, she was able to travel to Kentucky's area lab in Michigan, where she received three days of training from Steve Dietrich who did a wonderful job! Dyana Butler, who attended beginning BioNumerics training last fall, serves as a back-up when needed. The Kentucky lab hopes to send Jason Porter to the PFGE and BioNumerics training offered at CDC in August and bring him on board as well.

Kentucky's program has

slowly grown, and they are now able to test all *E. coli* O157:H7, *Listeria*, and 75% of *Salmonella* isolates. Currently, the Kentucky lab tests the top four (according to volume) *Salmonella* serotypes (Typhimurium, Heidelberg, Enteritidis, and Newport) routinely as well as any serotypes posted to the WebBoard™ as the cause of a possible outbreak. They also test *Shigella* when requested by epidemiology, or if there is an increase in a particular species. Occasionally, the Kentucky lab receives requests from hospitals for VRE or MRSA typing.

Since the Kentucky lab has been working with the PFGE program for so many years, it is exciting to see the possibilities for expansion and growth. With the addition of new staff members and support for the program, the PulseNet staff in Kentucky hopes to eventually subtype all of *Salmonella* isolates and begin routine surveillance of *Shigella*. In addition, they hope to explore new procedures and implement new testing methodologies as they become available. **CDC**

Update Meeting (Continued from page 2)

production chain from the farm to the table. This possibility will require close cooperation between PulseNet and USDA VetNet, as well as improved communications between the veterinarians, physicians, epidemiologists, and laboratorians. Steve Monroe (CDC) reminded us that it is not "all about bacteria" with a report on the meteoric rise of Norovirus in the USA. Peter Gerner-Smidt, PulseNet USA Unit Chief, showed evidence that an increase in mortality rate can be linked to prior infection with drug-resistant gastrointestinal pathogens.

Bala Swaminathan wrapped up the meeting by announcing Miami, Florida as the venue for the 10th Annual PulseNet Update Meeting. BioRad and Applied Maths were

acknowledged for their contributions to PulseNet, and of course APhL was recognized for their fantastic job organizing this year's meeting. As for the epidemiologists, well, it

was obvious to all that the joint meeting was long overdue and a great success, so hopefully they will join us next year as well. **CDC**

2005 PROFICIENCY TESTING

The fall round of 2005 proficiency testing is approaching fast. The cultures of *E. coli* O157, *Salmonella*, and *Shigella* will be shipped to certified laboratorians the week of September 12, 2005. The results for this round will be due November 14, 2005. The spring 2006 round will soon follow, the proficiency cultures for *Listeria* and *Campylobacter* will be shipped in early March. The results will be due in early May.

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Welcomes:

- **Simone Warrack**, B.S., has joined the Pulsed-Field Laboratory at the Wisconsin State Laboratory of Hygiene. She will work in both the Bacteriology and Pulsed-Field Gel Electrophoresis laboratories. She briefly worked at the Arizona State Laboratory performing PFGE before moving to Wisconsin in 2003 and is happy to be pouring gels once again!

Farewells:

- **Paola Bordoni**, B.A. has been with the CDC PulseNet Database Team and the *Listeria* Reference Laboratory for the past two years. Paola will be leaving CDC to go back to school; she has been accepted into the College of Osteopathic Medicine at Nova University in Ft. Lauderdale, FL for admission this fall. In the past two years, Paola has managed the difficult task of managing the *Listeria* database and running PFGE on the many *Listeria* isolates that

are sent to CDC on a regular basis. She has been an incredible asset to our team and will be sorely missed. We wish her the best of luck in all that she does!

- **Kali Hardy**, a member of North Dakota Public Health Lab left in March. She returned to the clinical setting where she can once again have interaction with the patients. We thank her for all the hard work and wish her the best for all her future endeavors.
- **Terry Kurzynski**, M.S., a 9-year veteran of PulseNet who worked at the Wisconsin State Laboratory of Hygiene for 33 years, retired at the end of June. Terry received the PulseStar Award in

2002 and was an instructor in three of the most recent sessions of the CDC training course "Agents of Bioterrorism: LRN Reference Laboratory Protocol Training." Terry said he will greatly miss being part of the PulseNet and BT training networks because of the many enjoyable personal contacts he made as a result of his involvement.

- **Lynn Mauro**, a member of CDC's *Listeria* laboratory left in June to pursue her career in scientific product sales. Please join us in wishing all the best to Lynn with her future endeavors.
- **Dominic Vacca**, M.S., a member of the Wisconsin State Laboratory of

Hygiene, will be following his girlfriend out to Boston this July. When asked what his future plans are he stated, "I haven't ruled out public health, but first there are sum lobsta en dah harba I means tah ketch."

- **Teresa Wright** has been with the Tennessee Department of Health Laboratory for 13 years, working in the PFGE section for the last three years. Teresa was responsible for keeping the PFGE department operational, with very little training, after the previous supervisor left. She has made many friends in PulseNet and will be missed by all.

HOW WOULD YOU LIKE TO RECEIVE THE PULSENET NEWSLETTER?

Currently, all subscribers to the *PulseNet* newsletter receive a hard copy in the mail. The newsletter is also available electronically on the WebBoard and on the PulseNet website (www.cdc.gov/pulsenet/news.htm). If you would like to stop receiving the hard-copy version and either receive the electronic version via e-mail or access it via the website or the WebBoard, please send your request to the PFGE inbox at pfge@cdc.gov with the subject line: *PulseNet* Newsletter.

